|  |  |
| --- | --- |
| **Joint Collaborative Team on Video Coding (JCT-VC)**  **of ITU-T SG 16 WP 3 and ISO/IEC JTC 1/SC 29/WG 11**  18th Meeting: Sapporo, JP, 30 June – 9 July 2014 | Document: JCTVC-R0008 |

|  |  |  |  |
| --- | --- | --- | --- |
| *Title:* | **JCT-VC AHG report: Screen content coding (AHG8)** | | |
| *Status:* | Input Document to JCT-VC | | |
| *Purpose:* | Report | | |
| *Author(s) or Contact(s):* | Haoping Yu Huawei R&D USA  Robert Cohen Mitsubishi Electric Research Laboratories  Alberto Duenas NGCodec  Tao Lin Tongji Univ.  Shan Liu MediaTek  Joel Sole Qualcomm  Jizheng Xu Microsoft  Yan Ye InterDigital | Email: | haoping.yu@huawei.com  cohen@merl.com  alberto@ngcodec.com  lintao@ngcodec.com  Shan.Liu@mediatek.com  joels@qti.qualcomm.com  jzxu@microsoft.com  yan.ye@interdigital.com |
| *Source:* | AHG8 | | |

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# Abstract

This report summarizes the activities of the JCT-VC ad hoc group on screen content coding (AHG8) between the JCT-VC 17th meeting in Valencia, ES, and the 18th meeting in Sapporo, Japan..

# Mandates

* Study (lossy and lossless) coding tools and the performance of HEVC and its range extensions on screen content.
* Evaluate and identify test material appropriate for testing screen content coding performance, in coordination with AHG16.
* Make recommendations for test conditions for screen content coding.
* Coordinate with SCCEs on combination experiments.
* Finalize the common test conditions for SCCEs..

# Activities

## Email reflector activity

The kick-off message for AhG 8 was sent out on April 10.

Many emails were posted during the early weeks of this interim period, discussing issues related to total PSNR calculation in the case when some frames in a sequence are encoded without any loss. Following the suggestions, we have added MSE-based PSNR values in the test results reporting template, and suggested to the SCM coordinators that the PSNR values for lossless coded frames should be resolution and bit-depth dependent, as suggested in JCTVC-Q0053.

## Common conditions for screen content tests (JCTVC-Q1015)

Based on the comments, suggestions, and agreements through email discussions, and in collaboration with the SCM and SCCE coordinators, we have included the following content in JCTVC-Q1015:

*“To facilitate the evaluation of the test results, sequence MSE results and MSE-based PSNR values are added to the test results reporting templates. Therefore, the following settings must be applied to the encoder:*

* *MSEBasedSequencePSNR=1*
* *PrintFrameMSE=1*
* *PrintSequenceMSE=1 (Note: this setting has to be entered at the command line for the SCM-1.0 software, as it is not included in the encoder configuration files mentioned above.)”*

The rest of JCT-VCQ1015 is basically the same as the test conditions for the CfP. Below is a summary of coding modes, configurations, encoding formats and QP values:

|  |  |
| --- | --- |
| Coding modes: | Lossy  Mathematically lossless |
| Configurations: | All intra (AI)  Random access (RA)  Low-delay B (LB) |
| Encoding formats: | R’G’B’ 4:4:4  Y’CbCr 4:4:4 |
| QP values: | Lossy: 22, 27, 32, 37  Lossless: 0 |

## Screen content coding tools

Most effort has been focused on the 5 technical areas that are under testing in SCCE1 to 5. SCCE coordinators did good job to keep CE participants well informed with the test plan, and most CE participants have made their deliverables on schedule.

# Contributions

Shown below are the contributions that are related to the general subject of screen content coding. This list will be revised to include additional documents and authors’ names.

**SCCE contributions**

|  |  |  |
| --- | --- | --- |
| [JCT-VC number](http://phenix.it-sudparis.eu/jct/doc_end_user/current_meeting.php?id_meeting=161&type_order=&sql_type=document_number) | MPEG number | [Title](http://phenix.it-sudparis.eu/jct/doc_end_user/current_meeting.php?id_meeting=161&type_order=&sql_type=title) |
| [JCTVC-R0031](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9393) | m34150 | Summary report of HEVC Screen Content Coding Core Experiment 1 (SCCE1): Intra Block Copying Extensions |
| [JCTVC-R0032](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9394) | m34154 | SCCE2: Summary Report of HEVC Screen Content Coding Core Experiment 2 on Line-based Intra Copy |
| [JCTVC-R0033](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9392) | m34147 | SCCE3: Summary report of CE on palette mode |
| [JCTVC-R0035](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9399) | m34183 | SCCE5: Summary report of HEVC Screen Content Coding Core Experiment 5 on Inter-component prediction and adaptive color transforms |
| [JCTVC-R0045](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9114) | m33594 | SCCE3: Test B.14 – Restricted run coding |
| [JCTVC-R0047](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9116) | m33597 | SCCE3: Test A.9 – Long-term palette prediction |
| [JCTVC-R0048](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9117) | m33598 | SCCE3: Test B.15 – Scanning indicator for the palette coded CUs |
| [JCTVC-R0057](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9127) | m33683 | SCCE3 Test B.4: Adaptive color index map scan |
| [JCTVC-R0058](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9128) | m33684 | SCCE3 Test D.1: Single color intra mode for screen content coding |
| [JCTVC-R0060](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9130) | m33686 | SCCE4: Results of Test 3.3 |
| [JCTVC-R0061](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9131) | m33687 | SCCE1 Test 3.4: IntraBC BV prediction |
| [JCTVC-R0063](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9133) | m33690 | SCCE3: Test A.8 – Improvements on Palette Prediction Vector Signaling |
| [JCTVC-R0064](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9134) | m33691 | SCCE3: Test A.7 – Encoder-Improved Palette Generation |
| [JCTVC-R0065](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9135) | m33692 | SCCE3: Test B.12 – Binarization of Escape Sample and Palette Index |
| [JCTVC-R0066](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9136) | m33693 | SCCE3: Test B.13 – Flag to Indicate Escape and Index Coding |
| [JCTVC-R0067](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9137) | m33694 | SCCE3: Test C.4 – Combination of Tests A.3, A.7, A.8, B.12, and B.13 |
| [JCTVC-R0072](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9142) | m33700 | SCCE5 3.1.2: Extended inter-component prediction (JCTVC-Q0036) |
| [JCTVC-R0081](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9151) | m33709 | SCCE1: Test 3.3 - BV prediction using the three last predictors |
| [JCTVC-R0082](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9152) | m33710 | SCCE3: Test A.3 - Palette stuffing |
| [JCTVC-R0083](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9153) | m33711 | SCCE3: Test B.5 - Index coding |
| [JCTVC-R0084](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9154) | m33712 | SCCE3: Test B.6 - Transition prediction method |
| [JCTVC-R0085](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9155) | m33713 | SCCE3: Test B.7 - Run coding |
| [JCTVC-R0086](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9156) | m33714 | SCCE3: Test C.2 – Combination of palette coding tools |
| [JCTVC-R0097](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9167) | m33726 | SCCE1: Result of Test 2.2 2.3 and 4.2 |
| [JCTVC-R0098](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9168) | m33727 | SCCE4: Result of Test 3.1 |
| [JCTVC-R0099](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9169) | m33728 | SCCE5: Result of Test 3.2.2 |
| [JCTVC-R0115](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9185) | m33747 | SCCE5 Test 3.1.3: Adaptive alpha-paramter coding in cross-component prediction |
| [JCTVC-R0116](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9186) | m33748 | SCCE1 Test 4.1: Symmetric intra block copy |
| [JCTVC-R0119](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9189) | m33751 | SCCE3 Test A.2: Palette coding and palette predictor updates |
| [JCTVC-R0120](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9190) | m33752 | SCCE3 Test B.2: Transition copy mode |
| [JCTVC-R0121](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9191) | m33753 | SCCE3 Test B.1: Line-based color index map coding |
| [JCTVC-R0122](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9192) | m33754 | SCCE3 Test C.1: Combination of SCCE3 Test A.2 and Test B.1 |
| [JCTVC-R0131](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9201) | m33765 | SCCE2: Line-based Intra Copy with 2-D BV and PU-level Splitting (Test B), and Its Variants with Constrained PU-level Splitting (Test C) and BV Merging (Test D) |
| [JCTVC-R0133](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9203) | m33767 | SCCE1: Test 3.5 - Block vector difference coding |
| [JCTVC-R0140](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9210) | m33774 | SCCE4: Test 3.2 Pixel based 1D dictionary coding |
| [JCTVC-R0141](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9211) | m33775 | SCCE1: Result of Test 1.2 for IBC with constrained buffers from left CTUs |
| [JCTVC-R0142](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9212) | m33776 | SCCE3 Test A.4: color table signaling with merge, sharing and DPCM |
| [JCTVC-R0143](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9213) | m33777 | SCCE3 Test B.8: String Search for Color Index Map Coding |
| [JCTVC-R0144](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9214) | m33778 | SCCE3 Test C.3: Combined Color Table and Index Map Coding of A.4 and B.8 |
| [JCTVC-R0145](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9215) | m33779 | SCCE4: Result of Test 4.3.4 for string search for sample coding |
| [JCTVC-R0146](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9216) | m33780 | SCCE5: Result of Test 3.1.1 for modified LMChroma |
| [JCTVC-R0147](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9217) | m33781 | SCCE5 Test 3.2.1: In-loop color-space transform |
| [JCTVC-R0166](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9236) | m33806 | SCCE3: Test A.5 - Palette table prediction |
| [JCTVC-R0167](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9237) | m33807 | SCCE3: Test A.6 - Palette table generation |
| [JCTVC-R0168](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9238) | m33808 | SCCE3: Test B.9 - BWT-based index grouping |
| [JCTVC-R0169](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9239) | m33809 | SCCE3: Test B.10 - Palette index value mapping |
| [JCTVC-R0170](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9240) | m33810 | SCCE3: Test B.11 - Escape color prediction |
| [JCTVC-R0171](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9241) | m33811 | SCCE1: Crosscheck report of SCCE1 test 2.3 Merge mode |
| [JCTVC-R0184](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9254) | m33824 | SCCE1: Test 1.1 – Intra block copy with different search areas |
| [JCTVC-R0185](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9255) | m33825 | SCCE1: Test 3.1 – Block vector prediction method for Intra block copy |
| [JCTVC-R0186](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9256) | m33826 | SCCE1: Test 3.6 – Block vector coding for Intra block copy |
| [JCTVC-R0187](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9257) | m33827 | SCCE1: Test 5.2 – Combination of Test 3.1 and Test 3.6 |
| [JCTVC-R0190](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9260) | m33830 | SCCE1 Test 2.1: IntraBC coded as Inter PU |
| [JCTVC-R0191](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9261) | m33831 | SCCE1 Test 5.1: Combination tests of 2.1, 2.3 and 2.4 |
| [JCTVC-R0200](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9270) | m33840 | SCCE3 Test D.2: Independent Uniform Prediction (IUP) Mode |
| [JCTVC-R0211](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9282) | m33852 | SCCE1: Cross-verification of test1.2 results |
| [JCTVC-R0240](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9311) | m33896 | SCCE1 subtest 3.2:Ping-Pong block vector predictor test |
| [JCTVC-R0241](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9312) | m33897 | SCCE1 subtest 2.4: AMP for Intra BC prediction |
| [JCTVC-R0306](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9380) | m34102 | SCCE3 base Software Bugfix Report |

**“Non-SCCE” contributions**

|  |  |  |
| --- | --- | --- |
| [JCT-VC number](http://phenix.it-sudparis.eu/jct/doc_end_user/current_meeting.php?id_meeting=161&type_order=&sql_type=document_number) | MPEG number | [Title](http://phenix.it-sudparis.eu/jct/doc_end_user/current_meeting.php?id_meeting=161&type_order=&sql_type=title) |
| [JCTVC-R0050](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9119) | m33664 | Non-SCCE1: Intra block copy masking |
| [JCTVC-R0051](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9121) | m33668 | Non-SCCE3: Adaptive escape scheme for palette mode |
| [JCTVC-R0089](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9159) | m33717 | Non-SCCE1: IBC BV throughput issue |
| [JCTVC-R0096](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9166) | m33725 | Non-SCCE1: Intra block copy with modified motion vector predictor |
| [JCTVC-R0100](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9170) | m33729 | Non-SCCE1: Unification of intra BC and inter modes |
| [JCTVC-R0112](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9182) | m33741 | Non-SCCE3: Bi-color intra mode for screen content coding |
| [JCTVC-R0113](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9183) | m33743 | Non-SCCE3: Improved Palette Index Coding with Contextualization |
| [JCTVC-R0117](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9187) | m33749 | Non-SCCE1: Segmental prediction for intra block copy |
| [JCTVC-R0123](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9193) | m33755 | Non-SCCE1: On block vector coding |
| [JCTVC-R0132](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9202) | m33766 | Non-SCCE2: Line-based Intra Copy with Unconstrained 2-D BV Coding for Test C |
| [JCTVC-R0134](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9204) | m33768 | Non-SCCE1:Unified BVD & MVD coding using a universal entropy coding scheme |
| [JCTVC-R0135](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9205) | m33769 | Non-SCCE3: Palette index coding using a universal entropy coding scheme |
| [JCTVC-R0136](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9206) | m33770 | Non-SCCE3:Run coding of the palette index map using a universal entropy coding scheme |
| [JCTVC-R0137](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9207) | m33771 | Non-SCCE4:Unified method for coding string matching syntax using a universal entropy coding scheme |
| [JCTVC-R0151](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9221) | m33785 | Non-SCE1: Improved CGS partitioning on top of SHM-6 |
| [JCTVC-R0161](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9231) | m33801 | Non-SCCE3: Simplified palette size coding |
| [JCTVC-R0162](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9232) | m33802 | Non-SCCE1: Intra block copy hash search enhancement |
| [JCTVC-R0165](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9235) | m33805 | Non-SCCE1: Improved intra block copy coding with block vector derivation |
| [JCTVC-R0174](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9244) | m33814 | non-SCCE3: Contexts for coding index runs |
| [JCTVC-R0175](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9245) | m33815 | non-SCCE3: Additional results for subtest C.4 |
| [JCTVC-R0176](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9246) | m33816 | non-SCCE3: Combination of subtest C.4 with new palette tools |
| [JCTVC-R0178](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9248) | m33818 | Non-SCCE5: On index signaling of cross component prediction |
| [JCTVC-R0179](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9249) | m33819 | Non-SCE1: 3D LUT with larger sizes |
| [JCTVC-R0180](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9250) | m33820 | Non-SCCE5: Deblocking filter for in-loop color-space transform |
| [JCTVC-R0181](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9251) | m33821 | Non-SCCE1: Block vector coding for Intra block copy |
| [JCTVC-R0182](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9252) | m33822 | Non-SCCE1: On Intra block vector difference redundancy removal |
| [JCTVC-R0184](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9254) | m33824 | SCCE1: Test 1.1 – Intra block copy with different search areas |
| [JCTVC-R0188](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9258) | m33828 | Non-SCCE1: Memory bandwidth reduction for Intra block copy |
| [JCTVC-R0189](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9259) | m33829 | Non-SCCE1: Intra block copy deblocking |
| [JCTVC-R0198](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9268) | m33838 | Non-SCCE3 Test D.1 Modified single color mode |
| [JCTVC-R0199](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9269) | m33839 | Non-SCCE1: Cross-check of JCTVC R0218 trType for Intra Block Copy for screen content coding |
| [JCTVC-R0202](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9272) | m33842 | Non-SCCE3: Copy from previous row mode for palette coding |
| [JCTVC-R0203](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9273) | m33843 | Non-SCCE1: Default vector selection for Intra block copy BV prediction |
| [JCTVC-R0204](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9274) | m33844 | Non-SCCE1: PU Intra block copy with flipping mode |
| [JCTVC-R0208](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9279) | m33849 | Non-SCCE1: Additional test results on intra block copy (IBC) |
| [JCTVC-R0213](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9284) | m33854 | Non-SCCE3: Palette and deblocking |
| [JCTVC-R0215](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9286) | m33856 | Non-SCCE3: WD text fixes for palette |
| [JCTVC-R0225](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9296) | m33869 | Non-SCCE4: Constrained run for 1D dictionary coding |
| [JCTVC-R0228](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9299) | m33874 | Non-SCCE3: Run-length coding for palette predictor |
| [JCTVC-R0229](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9300) | m33875 | Non-SCCE3: Palette predictor resetting |
| [JCTVC-R0232](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9303) | m33880 | Non-SCCE3: high throughput palette coding |
| [JCTVC-R0237](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9308) | m33887 | Non-SCCE3: Delta QP signalling in palette mode |
| [JCTVC-R0240](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9311) | m33896 | SCCE1 subtest 3.2:Ping-Pong block vector predictor test |
| [JCTVC-R0266](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9337) | m33938 | Non-SCCE3: Palette Table Prediction by the Nearest Palette Table |
| [JCTVC-R0268](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9340) | m33941 | Non-SCCE3: Results of SCCE3 with support of 2x4 CTUs as reference buffer |
| [JCTVC-R0269](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9341) | m33942 | Non-SCCE1: Analysis of Full Frame IBC Block Vector Distribution |
| [JCTVC-R0281](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9353) | m34023 | Non-SCCE2: An improvement on Intra Line Copy of SCCE2 |
| [JCTVC-R0304](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9378) | m34099 | Non-SCCE3: Improvements for SCCE3 Test C3 |
| [JCTVC-R0309](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9383) | m34110 | Non-SCCE1: Combination of JCTVC-R0185 and JCTVC-R0203 |
| [JCTVC-R0311](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9389) | m34144 | Non-SCCE3: Combination of palette tools |

**Contributions related to screen content coding, but are not directly related to an SCCE**

|  |  |  |
| --- | --- | --- |
| [JCT-VC number](http://phenix.it-sudparis.eu/jct/doc_end_user/current_meeting.php?id_meeting=161&type_order=&sql_type=document_number) | MPEG number | [Title](http://phenix.it-sudparis.eu/jct/doc_end_user/current_meeting.php?id_meeting=161&type_order=&sql_type=title) |
| [JCTVC-R0056](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9126) | m33682 | Restriction of CU sizes for Intra Block Copy |
| [JCTVC-R0087](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9157) | m33715 | On Sample Adaptive Band Value for Screen Content Coding |
| [JCTVC-R0101](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9171) | m33730 | Comparison of Compression Performance of HEVC 4:4:4 Range Extensions Test Model 7 and HEVC Screen Content Coding Extensions Test Model 1 with AVC High 4:4:4 Predictive profile |
| [JCTVC-R0102](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9172) | m33731 | Fix and improvement for hash based inter search |
| [JCTVC-R0104](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9174) | m33733 | On HAD calculation in the lossless RDO process |
| [JCTVC-R0105](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9175) | m33734 | On motion estimation start point |
| [JCTVC-R0106](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9176) | m33735 | Adaptive motion vector resolution for screen content |
| [JCTVC-R0114](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9184) | m33746 | Optionally disabling the usage of the intra boundary filters for SCC |
| [JCTVC-R0118](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9188) | m33750 | Modified Deblocking Filtering Process for Intra Block Copy (IBC) |
| [JCTVC-R0126](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9196) | m33758 | On deblocking for intra block copy |
| [JCTVC-R0201](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9271) | m33841 | Block vector predictor selection for intra block copy |
| [JCTVC-R0214](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9285) | m33855 | Video sequence conversion tools |
| [JCTVC-R0218](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9289) | m33859 | trType for Intra Block Copy for screen content coding |
| [JCTVC-R0219](http://phenix.int-evry.fr/jct/doc_end_user/current_document.php?id=9290) | m33860 | Improvement of cross-component prediction |
| [JCTVC-R0233](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9304) | m33881 | Modifications to palette coding for tiles/slices/dependent slices/wavefronts |
| [JCTVC-R0234](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=9305) | m33882 | Palette coding and scaling lists |
| [JCTVC-R0314](http://phenix.int-evry.fr/jct/doc_end_user/current_document.php?id=9398) | m34182 | On intra chroma boundary filtering |

# Recommendations

It is recommended to

* present all documents in Section 3, and create CEs if needed to further study these new tools.